REMARKS/ARGUMENTS

The claims are 1, 2 and 4-7, which have been rejected on the basis of the prior art. Specifically, claims 1, 2 and 7 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Luinstra et al. GB 2221853 A* in view of *Bartz et al. U.S. Patent No. 5,494,003* and *Harris U.S. Patent No. 5,921,079*. The remaining claims were rejected under 35 U.S.C. 103(a) as being unpatentable over *Luinstra et al.*, *Bartz et al.* and *Harris* and further in view of *Wunderlich et al. U.S. Patent No. 3,822,337* (claims 4 and 5) or *Wunderlich et al.* and *Nobuhiro JP 06-200354* (claim 6).

This rejection is respectfully traversed and reconsideration is expressly requested.

As set forth in claim 1, Applicant's invention provides a fission reactor for a Claus plant in which a catalyst chamber (10) of a boiler has a catalyst bed of a loose catalyst bulk material, wherein the catalyst chamber (10) is delimited, on both sides, in flow direction, by a plurality of gas-permeable checker

bricks (14) containing elongated holes and has a mantle-side fill opening (15) disposed between the gas-permeable checker bricks (14) for ***introducing the catalyst bed (3)***.

As recited in claim 1, the catalyst bed, which is defined as loose catalyst bulk material, is introduced through the mantle-side fill opening (15). Accordingly, the catalyst directly abuts against the permeable checker bricks (14), wherein, when the catalyst bed is replaced, the old loose catalyst bulk material is removed and new or regenerated loose catalyst bulk material is poured through the mantle-side fill opening into the catalyst chamber. Hence, it is respectfully submitted that claim 1 clearly defines that the catalyst bed is not provided as a compact element.

With respect to the primary reference to *Luinstra et al.*, the Examiner has taken the position that the term "rigid permeable catalyst structure" does not necessarily mean that the catalyst itself is rigid but rather that the catalyst **structure** is rigid. Even if the Examiner's position is correct, *Luinstra et al.* nonetheless discloses only a rigid catalyst structure

which is provided as a compact element and which is placed as a single element inside the furnace. See page 5, lines 25-27 of *Luinstra et al.* Against this background, it is respectfully submitted that a person skilled in the art would always replace the complete rigid permeable catalyst structure of *Luinstra et al.* as a whole during maintenance.

The defects and deficiencies of the primary reference to *Luinstra et al.* are nowhere remedied by the secondary reference to *Bartz et al.* Starting from *Luinstra et al.*, a person skilled in the art would be taught to place the rigid permeable catalyst structure near the outlet of the reaction furnace, where the temperature is expected to be lower. This placement is suggested by *Luinstra et al.* because the life of the ***catalyst*** will likely be longer at lower temperatures (see page 5, lines 25-28 of *Luinstra et al.*), which means that the catalyst itself is the most temperature sensitive element of the rigid permeable catalyst structure. There is no disclosure or suggestion in *Luinstra et al.* that would lead a person skilled in the art to care about the material of the vertical screens with respect to an embodiment comprising a layer of catalyst particles arranged

between vertical screens. See page 6, lines 16-18 of *Luinstra et al.* Combining *Luinstra et al.* with isolated features from the secondary reference to *Bartz et al.* would not be obvious to a person skilled in the art because *Bartz et al.* concerns itself with a completly different problem of providing a water boiler having an infrared burner, whose waste gases comprise only small proportions of NO_x. The water boiler is oriented perpendicularly, whereby the combustion of gas and combustion air takes place directly at a perforated ceramic plate that is consequently part of the burner and exposed to a very high heat load, which it is respectfully submitted is not comparable to the heat load downstream with respect to a combustion chamber.

According to the Office Action, the terms "ceramic plate" and "checker bricks" are used as an equivalent, which it is respectfully submitted is done without any justification. Applicant wishes to emphasize that these two terms relate to completely different materials with different properties and dimensions. According to *Bartz et al.*, the ceramic burner plate comprises a thickness of about 0.5 inch (see column 2, line 24 of *Bartz et al.*), wherein the perforated ceramic plate that fills

the entire inside diameter of a lower metal skirt is usually made by casting (see column 2, lines 29-34 of *Bartz et al.*), wherein the perforation can be carried out by drilling the ceramic sheet or by impressing during the casting operation. There is no disclosure or suggestion in *Bartz et al.* that would lead one skilled in the art to use gas permeable checker bricks, which are much thicker, instead of the ceramic plate taught by *Bartz et al.*.

The newly-cited secondary reference to *Harris* relates to an emission control apparatus, wherein a rigid catalyst structure (FIGS. 1 and 3 of *Harris*) can be replaced through a mantle-side fill opening.

None of these references discloses or suggests providing a loose catalyst bulk material between walls of permeable checker bricks, wherein the catalyst bed, **i.e. the loose catalyst bulk material**, can be introduced through a mantle-side fill opening. According to the cited prior art, it is always suggested to provide a compact rigid permeable catalyst structure, wherein

Harris discloses only the replacement of such a rigid permeable catalyst structure.

Accordingly, it is respectfully submitted that *Luinstra et al.* in combination with *Bartz et al.* and *Harris* cannot lead a person skilled in the art to Applicant's fission reactor for a Claus plant as recited in claim 1.

Claim 4 is dependent on claim 1 and further specifies that the outflow-side chamber (11) of the boiler (9) for the ***Claus process*** is connected to a branch line (16) lined with refractory material, which opens in to a process gas line (17) adjacent to the boiler (9). **In the opening region** of the branch line (16), a valve body (18) is disposed in adjustable manner, with which the amount of flow of a hot gas stream that exits from the branch line (16) can be regulated. Although the Examiner relies on the secondary reference to *Wunderlich et al.* as disclosing this feature, it is respectfully submitted that the Examiner's position is unfounded.

As an initial matter, Applicant wishes to emphasize that Applicant's fission reactor as recited in the claims relates to a fission reactor for a Claus plant. Referring to FIG. 3 of *Wunderlich et al.*, the shown process does not explicitly contain the Claus process. As explained in column 8, lines 67-71 of *Wunderlich et al.*, the cooled processed gas is suitable for use in a Claus furnace, wherein the gas leaves the waste heat boiler 56 through outlets 59 to be fed to a Claus oven. In accordance with table 3A of *Wunderlich et al.*, SO_2 is not reduced but rather is produced in the described process. Accordingly, it is respectfully submitted that *Wunderlich et al.* does not give any information about a suitable embodiment of a fission reactor for a Claus plant. Furthermore, the regulating valve 54 of *Wunderlich et al.* is placed inside the by-pass and not situated in the opening region of the branch line. Due to the flow properties, there will be no cooling during operation by cooled gas.

Accordingly, it is respectfully submitted that claim 4 is patentable over the cited references for this additional reason.

The remaining reference to *Nobuhiro* cited with respect to claim 6 has been considered but is believed to be no more relevant. *Nobuhiro* simply discloses a heat-resistant steel for exhaust valve. There is no disclosure or suggestion of a fission reactor for a Claus plant having the structure set forth in Applicant's claim 1 or the benefits that are achieved by that structure.

Accordingly, it is respectfully submitted that the claims are patentable over the cited references.

In view of the foregoing, withdrawal of the final action and allowance of this application are respectfully requested.

Respectfully submitted,
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